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ABSTRACT

The Committee on Performance-Based Teacher Education (PBTE) of the American Association of Colleges for Teacher Education reported that adequate evaluation is critical to the success of PBTE. Some basic measurement and decision-making concerns are crucial to such an evaluation. Essential is a list of competencies. Problems in assessing attainment of these competencies include environmental factors, time factors, characteristics of both the pupils and the type of learning involved. But even in the lists of competencies already available, there arise questions as to exactitude of terms, as to whose performance, the teacher's or the pupil's, is being assessed, and as to the ability to assess behavior at all. Above all, it is important to establish a relationship between teacher performance and changes in pupil behavior; the research to establish this relationship must one day be conducted. All things considered, the need for any measurement at all boils down to a need for a basis for more adequate prediction. Until the problem of assessment is surmounted, the real potential for a significant contribution of the PBTE approach will remain unknown. (JA)

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PERFORMANCE-BASED TEACHER EDUCATION
Some Measurement and Decision-Making Considerations

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Preface

The American Association of Colleges for Teacher Education is pleased to publish this paper as one of a series sponsored by its Committee on Performance-Based Teacher Education. The series is designed to expand the knowledge base about issues, problems, and prospects regarding performance-based teacher education as identified in the first publication of the series on the state of the art.[1]

Whereas the latter is a declaration for which the Committee accepts full responsibility, publication of this paper (and the others in the PBTE Series) does not imply Association or Committee endorsement of the views expressed. It is believed, however, that the experience and expertise of these individual authors, as reflected in their writings, are such that their ideas are fruitful additions to the continuing dialogue concerning performance-based teacher education.

One of the perplexing problems associated with the implementation of the PBTE strategy is the assessment of teaching competencies. In its first paper, the Committee asserted with respect to the assessment problem that ". . . the overriding problem before which the others pale to insignificance is that of the adequacy of measurement instruments and procedures. PBTE can only be successful if there are adequate means to assess the competency of the student."[2] The Committee commissioned the author to address this question and this paper is the result of his analysis of the problem. It is anticipated that the assessment topic will also be treated in future papers in the PBTE Series. We believe that this study is an important contribution to the literature about PBTE.

AACTE acknowledges with appreciation the role of the National Center for Improvement of Educational Systems (NCIES) of the U. S. Office of Education in the PBTE Project. Its financial support as well as its professional stimulation are major contributions to the Committee's work. The Association acknowledges also the contribution of members of the Committee who served as readers of this paper and of members of the Project staff who assisted in its publication.

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[1]Elam, Stanley, Performance-Based Teacher Education: What Is the State of the Art? The American Association of Colleges for Teacher Education, December 1971.

[2]Ibid., p. 21.

Special recognition is due J. W. Maucker, chairman of the Committee, David R. Krathwohl, member of the Committee, and Shirley Bonneville, member of the Staff, for their contributions to the development of the PBTE Series of monographs.

Edward C. Pomeroy,
Executive Director, AACTE

Karl Massanari, Associate Director, AACTE, and Director of AACTE's Performance-Based Teacher Education Project

Introductory Note

One can predict that performance-based teacher education (PBTE) is certain to fail to reach its ultimate objective if it continues on its present course. This failure will be caused by the almost complete lack of attention given to the assessment of teaching competencies, a core concept of PBTE. Only by such assessment can we achieve the goal of assuring that a teacher can indeed perform in ways that result in children learning.

Until such assessment can be made, achieving PBTE will be a myth. No one can deny that the attempts to achieve that myth will have had numerous effects, many of them positive. It will have made faculty concerned with teacher preparation programs rethink their goals in hard, concrete terms, though most will have confined these efforts to cognitive goals. It will have brought teachers, administrators and unions into the decision-making processes of teacher education in colleges and universities. It will have accelerated the movement of instruction in teacher education programs further into reality-based field experiences. It will have modularized and individualized many such programs. But such changes are better titled: individualized, modularized, field centered, or even criterion-referenced programs. Each of these changes has certain positive contributions to make to teacher education, but does not make it performance-based. That comes only with adequate evaluation at exit from training.

In commissioning this paper, the committee wished to highlight this whole evaluation problem. It seemed unnecessary to document the paucity of instruments that are available for the purpose. This is already amply illustrated in another publication by Sandefur.* But, in addition, there are a host of other issues surrounding the evaluation problem that stem from the problems of measurement itself, and these are not widely understood. It was to suggest the magnitude and complexity of these problems that this paper was commissioned. Dr. Merwin has very ably fulfilled our expectations.

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*Sandefur, J. T., An Illustrated Model for The Evaluation of Teacher Education Graduates, American Association of Colleges for Teacher Education, Washington 1970.

Though Sandefur does not highlight the point, validity data for even the earliest developed of the teacher observation instruments that would be employed in the assessment process is only now beginning to accumulate in sufficient quantity to judge their empirical validity.

It is clear from the above that this is one of our most important papers to date. Its message regarding the measurement problems, when combined with the instrumentation problem, has implications for a variety of readers. To researchers and developers it points to some areas which are critical to the success of PBTE that it is hoped they would attack. To resource allocators it gives perspective on where support must be given if the movement is to reach fruition. To legislators and state department personnel it provides a better understanding of the complexities and hurdles which stand in the way of successfully bringing PBTE programs on line which cannot be swept away or ignored in mandating the adoption of PBTE.

These problems require great concentration of thought, effort and research. Until and unless some <u>real</u> progress is made on resolving the problems of instrumentation and measurement, PBTE will go down in the history books as one more bandwagon in the long line of over-simplistic solutions for complex problems. But with proper pacing of implementation and sufficient attention to the problems noted here, the many positive gains that the PBTE movement can and already has begun to bring to teacher education can be built upon and markedly enlarged. Toward the goal of bringing about the latter rather than the former prophecy, the committee commends this paper to the reader.

David Krathwohl, Member of the
PBTE Committee and chairman
of its Task Force on Commissioning
Papers

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PERFORMANCE-BASED TEACHER EDUCATION: SOME MEASUREMENT AND DECISION-MAKING CONSIDERATIONS

Introduction

To some people performance-based education is an idea whose time has come again, or perhaps an idea whose time is always. Some would argue for a similar statement regarding "Performance-Based Teacher Education." The degree of accuracy of such a statement about "Performance-Based Teacher Education" needs examination. Is it "new"? Does it really offer potential for improving teacher education? Do we have the tools and know how to pull it off?

It is the obligation of scholars of education to study each new proposal in the field, carefully utilizing the existing knowledge and experience base as a foundation for examining all components. While encouraging much needed experimental and developmental efforts to improve all areas of education, thorough examination must take place to avoid narrow visioned acceptance of proposed panaceas which may replace existing practice with something less productive. Developments with true potential for improvement are made all the stronger by careful analysis of their crucial elements.

In Performance-Based Teacher Education: What Is the State of the Art?[3] the AACTE Committee on PBTE labels the assessment of the complex cognitive and affective objectives that are such an essential part of the training of teachers as the "foundation stone on which the program rests." The Committee notes that one of the uncertainties that hovers over every PBTE experiment is, "What will be accepted as evidence of successful performance by the teacher candidate?"

Four of the five elements identified by the Committee as "essential" and several of those labeled "implied" in its definition of PBTE refer to the delineation of competencies and their assessment. The overall proposal is that a person, given the competencies needed to be effective in the teaching role, should be allowed to take a teaching position when he can demonstrate that he has acquired those competencies, regardless of how or where. The Committee points out

that, to make such an approach work and to develop an effective training program based on that position, the competencies to be demonstrated and the criteria by which a person's performance is judged must be explicit enough to unambiguously delineate the assessment procedures to be used. Indeed, the ability of trainers to adequately define and measure competency lies at the heart of the question of whether PBTE can be successful.

As part of the ongoing examination and seeking of the potential of PBTE for improving teacher education it is incumbent on scholars in the field to critically examine the measurement components of the program, weigh them against the existing knowledge base in educational measurement and call attention to difficulties and deficiencies. In considering this critical aspect of PBTE as an alternative to course-based teacher education, it is instructive to 1) take brief note of relevant highlights of past attempts to deal with the measurement of performance in educational settings, 2) consider how the assessment needs of course-based education programs compare and contrast with those of PBTE, and 3) carefully examine "why" and "how" questions in regard to measurement aspects of a PBTE program.

Is Performance-Based Education New?

Attempts to answer the question posed for this section readily gets into the never-ending concerns regarding means and ends. Throughout history schools have been a vehicle used by society to produce behavior change (learning, skill development, etc.) in pupils. With few exceptions, the functioning of the school has then replaced change in pupil performance, the purported raison d'etre of schools, as the focus of attention. In spite of considerable diversion of attention to means rather than ends, there is a long history of concern for the ends as defined by performance and Horace Mann called the attention of educators to some of the problems related to assessing performance many years ago.[8]

Every teacher who has ever asked a pupil to recite, write an essay, carry out the calculations on a mathematics worksheet or conduct an experiment in a chemistry laboratory has shown a concern for performance. More than forty years

ago Ralph W. Tyler proposed evaluation on the basis of asking the student to do (i.e., perform) those things set forth in behaviorally stated objectives of instruction. Nearly forty years ago the challenge of the validity of the experience-based Carnegie Unit was launched through the Eight-Year Study which proposed a performance base for identifying those who could succeed at college-level work.[11] At the college level, the efforts of Robert Hutchins at the University of Chicago involving a comprehensive examination system to determine whether a student has the competencies each course was designed to develop stands as an outstanding application of a "performance-based" philosophy.

Directly related to the matter under consideration here are early 20th century efforts at assessment of teacher competencies as reflected in such works as Walter Scott Monroe's 1918 book Measuring the Results of Teaching.[10] The concerns of that time are well reflected in Judd's 1918 NSSE yearbook statement:

> "The time is rapidly passing when the reformer can praise his new devices and offer as the reason for his satisfaction, his personal observation of what was accomplished. The superintendent who reports to his board on the basis of mere opinion is rapidly becoming a relic of an earlier and unscientific age. There are indications that even the principals of elementary schools are beginning to study their schools by exact methods and are basing their supervision on the results of their measurements of what teachers accomplish."[5]

The fact that some half a century later most would view this statement as very optimistic can be attributed in large part to the complexities which surround the measurement of "what teachers accomplish."

Is Evaluation in Current Teacher Education Performance-Based?

The answer to this question is in part definitional. It is tied up with a very complex matter of direct vs. indirect measurement (to be discussed in detail later) and,

of course, would find some variation as different programs are examined.

The Committee states that PBTE is, "by no means a repudiation of all that has gone before in teacher education. Rather, the movement may be looked upon as a convenient vehicle for bringing about many kinds of improvement." On the other hand it notes that PBTE, "has the potential to revolutionize teacher education." As noted above, the validity of this latter statement critically hinges on adequate assessment of competencies based on observation of performance.

In an effort to contrast PBTE with current teacher education programs some chose to label the latter "experience-based" with the implication that course-based teacher education does not concern itself with assessment of performance. Such implication deserves examination.

One would expect only the very poorest supervisors of clinical experiences or student teaching to completely ignore the performance of a pre-service student in a classroom and award credit on the basis of meeting "experience" requirements. One could hardly consider a person a "methods" trainer who did not have students actually performing analyses of instructional situations and setting forth plans to deal with them. There is not a test and measurement professor worthy of the title who in attempting to help students learn to develop classroom achievement tests and interpret their results that does not ask them to "develop" and "interpret" accordingly in some satisfactory way prior to receipt of "credit." It would be difficult indeed to find anything but a straw-man teacher education program today that does not use performance and the rating of performance as a basis of awarding the credits that must be accumulated for graduation and certification. A dichotomy of course-based teacher education and PBTE on the basis of whether there is concern for and attempts to assess performance would have little basis in reality.

Three basic differences in the measurement needs of course-based programs and PBTE can be identified. One is the breadth of the behavior pattern to be assessed. A second is measurement of <u>degree</u> of competency vs. identification of existence of a pre-stated level of competency.

The third is identification of the decision makers who are expected to use the information and how and when they use it.

A course-based program awards course credit for successful development of competencies during a pre-determined period of time (e.g., a quarter, semester, or academic year). The expected achievements are generally attainable during that period. Credit is given to those who at the end of the period can demonstrate at least minimally acceptable accomplishment of the goals established for the course.

PBTE seemingly calls for assessment of performance at two levels of generality of behavior, one on either side of the minimal behavior repertoire of concern in awarding course credit. The program calls for successful completion of "modules" which are considerably more limited in scope than a conventional course. Miss Harrison, a purported graduate of the hypothetical Greenblock Teaching Center comments in Manchester Interview[1] that, "Each of the teacher roles is broken down into a major module with a number of individual elements making up the total module." The Committee says, "A module is a set of learning activities (with objectives, prerequisites, pre-assessment, instructional activities, post-assessment, and remediation) intended to facilitate the student's acquisition and demonstration of a particular competency." The limited set of competencies to be developed by the module are then assessed on a "have-have not" basis.

There is also an assessment of a broad behavior repertoire called for at the end of a PBTE program. While there is some ambiguity about the assessment needs at the exit point of the program, it appears that something more than the simple compilation of competencies demonstrated at the end of the various modules is to be assessed. Mr. Collins says that at the Greenblock Center, "Students can leave at any time they have demonstrated the required competencies."[1] The Committee says an individual completes the preparation program "When, and only when, he demonstrates the competencies that have been identified as requisite for a particular professional role." It goes on to note that specifying instructional objectives in PBTE is applied to whole programs and "role integration takes place as the perspective teacher gains an increasingly comprehensive perception of teaching problems." This seems to call for assessment of a broader

scope of behavior than that assessed at the end of a conventional course, though it possibly approximates the assessment concerns of those involved in student teaching courses.

The PBTE approach has a student work on the learning experience of a module until the specified, minimal competencies can be demonstrated. This calls for measurement on a "go-no go" basis to separate the "haves" from the "have nots." This is a selection-type decision situation that also is called for at the completion of a PBTE program. The program ends for a student when he can demonstrate that he is a "have" in terms of the minimal competencies for the program.

The professor in a course-based teacher education course also faces this either-or type of measurement situation in deciding whether course credit is to be awarded. Normally, however, the fixed time approach of courses does not call for a person to cease working on the development of the competencies of concern when he or she reaches the critical go-no go, minimal level. Rather, with the assistance of the professor he or she will continue to develop and sharpen those competencies until time for the course runs out (i.e., end of the quarter or semester). This then poses a need for measurement of degree of development of the competencies of concern in addition to measurement for the go-no go decision. Both PBTE and conventional programs explicitly recognize the need for the continuing development of role competencies after completion of the pre-service program.

In summary, the answer to the question of whether evaluation in current teacher education is performance-based must be yes. Assessment of performance is an integral part of course-based teacher education programs. It is generally related to competency of various aspects of the teaching role as spread across courses which operate over a period (quarter, semester) of time with attempts to maximize development of certain competencies (however ill-defined) during that period of time. The granting of course credit signals the instructor's judgment that at least minimal levels of competency have been demonstrated. The competencies to be developed in the set of courses that constitute a "program" generally overlap with some "prerequisite" credits required for admission into higher level courses. The performance observed and evaluated in the school setting

near the end of the program normally encompasses the most general set of competencies.

There can be little question of the value of explicit and prior announcement of skills to be developed by any teacher education program. There is much to be desired along these lines in existing course-based programs. Whether PBTE programs can develop the level of explicitness needed to set forth obvious, unambiguous and feasible measurement procedures remains to be seen.

Does PBTE Pose New Measurement Needs?

There are a number of unique programmatic aspects of PBTE that relate to measurement considerations including: (1) the explicit statement of competencies to be measured, (2) the use of modules rather than courses as the basic unit of a program, (3) movement within a program when a specified minimal level of competency is identified, and (4) decision making by the student in selecting from among alternative treatments in an attempt to develop stated competencies. We can turn then to measurement considerations and decision-making information needs which arise from a teacher education program that has these characteristics.

As noted earlier, one way in which PBTE is supposed to differ from current teacher education programs is the explicitness with which the competencies to be developed and the criteria to be employed in assessing their mastery are stated. Such explicitness should leave little or no ambiguity regarding procedures for assessing performance related to the competency nor in arriving at a decision of whether an individual has developed it. The most comprehensive collection of statements of teacher competencies available to date is The Florida Catalog of Teacher Competencies.[2] While it is not possible to consider all such statements in this paper, we can look at a small sample. Examining measurement considerations as they relate to statements of competencies from different sections of the Catalog should be instructive in determining the extent to which they indeed provide an adequate basis for directing assessment of their achievement.

1. Identify a student's instructional needs on basis of errors.
2. Involve students in teacher-pupil planning.
3. Structure opportunities to develop health and safety habits.
4. Help students develop attitudes compatible with society and self.
5. Cause student to perceive relevance of learning.
6. Teach the concept of classification.
7. Tolerate ambiguity.
8. Establish and maintain relationship with parents.
9. Use variety of media in course of teaching lesson or unit.
10. Record accurately an incident where liability may be involved.

Simply citing such statements here, or in the Catalog, in no way demonstrates that they are "derived from explicit concepts of teacher roles" and "made public in advance" as called for in the essential elements on competencies given by the AACTE Committee. More directly relevant to measurement considerations, is the Committee concern that they be, "stated so as to make possible assessment of a student's behavior in relation to specific competencies."

In attempting to evaluate these statements of competencies (or any others in the Catalog) on this latter "essential" characteristic, one might argue that it is not possible without the accompanying criteria which are to be "explicit in stating expected levels of mastery under specified conditions." If such is the case, a step forward might be to consider such criteria as a necessary part of any statement of a competency, as Mager has proposed for educational objectives in general.[7]

Even without the criteria statements needed to judge the adequacy of explicitness for unambiguously directing development of the measurement procedures to be used, a number of aspects of these statements pose assessment problems. For example, there are bound to be difficulties in designing

procedures to determine the amount of "help" provided by a teacher in attempting to demonstrate his competency to help students develop attitudes compatible with society and self (No. 4). The variety of media available and practical will vary widely from situation to situation in assessing a teacher's competency to use a variety of media (No. 9). There are differing and more or less complex problems in considering the measurement of these and similarly stated competencies with any degree of objectivity, reliability and comparability of conditions and procedures. If the statements in the Catalog are at all typical, we are still a long way from meeting the "Essential" elements identified by the Committee.[3]

In addressing the measurement aspects of this portion of the program, a basic consideration centers on whose performance is to be designated in stating competencies to be assessed. A direct attack on assessing the success of a teacher would consider change in the performance of the pupils of the teacher. The indirect approach would call for measurement of the teacher's performance in doing those things that are supposed to bring about learning in pupils. Given a desired level of reliability there are many different cost and measurement factors involved in the two approaches.

Richard L. Turner makes this distinction very well in his "Levels of Criteria."[13] In setting forth six "Levels of Criteria" for PBTE, Turner notes that the ultimate goal of a teacher is to bring about desirable and relatively lasting change in pupil behavior. An intermediate step to direct assessment of such a competency would be demonstrated by assessing the stability of the desired pupil behavior change over a shorter period of time. Turner's remaining four "levels" shift emphasis to measurement of teacher behavior rather than changes in pupil behavior and thus can be considered indirect measures of the ultimate goal of bringing about desired change in pupil performance.

There are several basic differences in the approach needed if one is to attempt to accurately assess whether the teacher has achieved "competencies" in bringing about changes in pupil performance or to demonstrate ability to do those things that are purportedly related to that ultimate goal. Before moving to the specific measurement concerns we can briefly consider which of the illustrative statements

of competencies above call for measures of changes in pupil performance brought about by the teacher and which call for measures of teacher performance (recognizing the possible errors involved in dealing with statements out of context). It would appear that Numbers 1, 2, 3, 6, 9, and 10 call for measurement of teacher performance only. Number 5 clearly calls for measurement of change in pupil performance. Without further clarification there are varying degrees of ambiguity in interpreting Numbers 4, 7 and 8 on this basic measurement concern.

Measurement considerations involved in the assessment of a teacher's performance as demonstration that he can do those things that are supposed to cause changes in pupil performance are pretty much a sub-set of those involved in assessing whether a teacher has caused change in pupil performance. Thus, the more general aspects involved in both might best be examined first.

In any measurement situation it is important to note the potential sources of noise, or error, in the effort. In the measurement of human behavior a number of such sources of error must be considered.[12] It is not possible to consider all such here but we can consider several error sources of particular concern in PBTE. They include error due to lack of comparability of conditions under which the "measure" is taken, errors in observing and recording behavior and inaccuracies in the matching of the observed behavior against the criterion behavior in attempting to arrive at the yes-no decision regarding achievement of competency.

A major matter of concern revolves around sampling which will permit defensible generalizations. All minimally trained educators are aware that any assessment of performance involves only a sampling of a behavior repertoire. It must be assumed that the proponents of PBTE are interested in the "performance" of teachers in a large population of circumstances rather than the specific set of circumstances that obtain at the particular time and place that the assessment takes place.

One concern is time. Generally one would like to be able to say something about what a person likely will do in a future teaching job on the basis of the specific performance used to assess competency. More on time dimension concerns a bit later.

A second concern must be the particular content and methodology of instruction involved at the time performance is assessed. Certainly a teacher candidate under observation will behave differently while, say, teaching basic governmental structure than while teaching analysis of social situations such as those involving ethnic group relationships.

A third consideration must be the background relative to the topic under study that the pupils bring to the learning experience. The task of the teacher will be different if the children bring a relatively homogeneous and adequate preparation for the learning experience than if they are heterogeneous in background with some having considerable deficiencies.

A fourth concern must be the personal characteristics and attitudes toward school and learning of the particular pupils the teacher is working with when his or her performance is under observation.

The list is long. It includes many aspects of the physical environments and resources as well as general level of learning ability of the pupils. Those concerns listed are only representative of the more relevant variables that must be considered in looking at the sampling problems related to assessment of performance in the classroom and some of the limits sampling errors place on generalizations that can be made from the observations.

The psychological and sociological literature over the years has included descriptions of numerous attempts to deal with problems related to adequate procedures for objective and reproducible observations of human behavior. Lorge noted the basic matter of concern in grand eloquence, stating, "The adequacy of observation is a primary antecedent to the adequacy of measurement."[6]

Much effort has gone into the development of checklists and procedures for observing and recording classroom behavior. Objectivity (i.e., reproducibility) by different raters, must be applied as one criterion for any observation scheme used. Meeting the criterion of explicitness of statement of competencies under review would help. Audio and videotaping of the teacher's behavior can produce records as a basis for multiple ratings and this can help. However, no interpretation of records should be made without

full recognition of potential errors due to the fallibility of humans as observers with all of the ever troublesome bugaboos of halo-effect, selective perception, etc.

Dividing people into just two groups--competent and incompetent--is a less complex measurment task than dividing them into several groupings on the basis of levels of competency. Even so, interpretation of performance in terms of go-no go decision on whether a competency has been achieved is a complex concern for PBTE. Observation schedules must focus attention of the rater specifically on those aspects of the performance relevant to the competency under judgment. Procedures for comparing the recorded behavior with the standards set for the competency must be clear and unambiguous. Such conditions must obtain if objective, reproducible ratings are to be used to assess the existence of a competency. The degree of explicitness with which the competency is stated will be a large determiner of success at this point.

It takes only a brief look at the statements of competencies above from the Catalog to ascertain that they are far from sufficient for giving the direction needed for objective observation of those aspects of a performance that are relevant to determination of competency vs. no competency. This is obviously the case for these examples and most, if not all, of the competency statements in the Catalog. Acting only on these competency statements it is highly unlikely that two trainers would independently structure the same assessment procedures or that two observers would attend to the same aspects of a performance.

In the first example, "Identify a student's instructional needs on basis of errors," one assessor might well accept a simple oral questioning procedure while another might consider only careful classification of errors established on a theory of development as adequate. As evidence of "involving students in teacher-pupil planning" (example No. 2) one judge might accept allowing students to say what they want to do, while another may feel that the observation is not complete until completion of what is jointly planned. The complexities, and alternative procedures that might be involved in determining whether a teacher has "caused" a student to perceive relevance of learning (example No. 5) are almost unlimited. Whether what is needed to make these competency statements functional

for directing measurement efforts is greater explicitness in the behavior to be observed, the need for adding criteria of acceptance, or both, it must be recognized that they do not provide an adequate base for designing assessments as they stand.

Two concerns must be mentioned in closing this brief summary of general measurement considerations in PBTE. One is a matter of stability of a competence over a period of time. The other is the related matter of interdependence of competencies. Is there evidence to support a statement such as, "Once competent, forever competent" in regard to the many competencies involved in PBTE? If such a statement is not accurate for all competencies for all time, do we know those experiences that are likely to lower a person's proficiency so as to drop him from the "have" to the "have not" classification for each of the various competencies? Do we know the extent to which practice and drill to achieve competency B enhances or detracts from the person's declared minimal level of achievement on competence A? Unless there are documentable affirmative answers to such questions, serious consideration should be given to the monitoring of what Messick[9] calls "unintended" as well as intended outcomes of each learning experience. Rather than assessing only the specific skills under development, one should consider the need to monitor retention of all skills.

Pupil Performance as a Base for Assessment

The raison d'etre of a teacher is to help bring about change in the learnings and skills of pupils as reflected in their behavior (i.e., performance). Using changes in pupil behavior over a long period (Turner's Level 1) or shorter period (Turner's Level 2) as the measure of performance of a teacher candidate to make the "go-no go" decision on development of a competency poses several complexities in addition to those set forth above. They include the need to state the competency in terms of pupil behavior, assessment in terms of a change in behavior based on a minimum of two observations (before and after intervention by the teacher), observing and recording performance relevant to the teacher competency under consideration, and most problematic of all, accurately identifying the teacher's contribution to the change observed.

In one sense this poses an easier task than that of assessing teacher performance. For many years professional educators have worked at the task of expressing objectives of instruction in "behavioral" terms. And, much effort has gone into the development of achievement tests which ask the pupil to exhibit the behavior called for in the objectives. As noted above, this is complicated by the fact that objectives are often interdependent. Efforts to bring about change on one level of development may well affect the level on others, possibly negatively. While expressing concern for both cognitive and affective development, a student can easily develop a dislike for the subject under study, school, and even the teacher herself, while she is helping him "master" his cognitive skills.

Much has been written, indeed whole books,[4] regarding the complexities and difficulties involved in reliably measuring changes in behavior. Let it suffice to say that all of the problems of observation and the recording of behavior now enter twice. There will be measurement errors involved at both ends of the process, making the assessment of what has changed and the degree of change less reliable than the pre- or post-status measures used to determine it.

While the above-mentioned aspects of the direct approach in terms of whether the teacher did what he or she is hired to do--cause change in the performance of pupils--are not simple to handle, the attribution of causation aspect offers even a greater challenge. If the competencies are written in terms of ability to bring about change in pupils, the process must involve separation of those changes attributable to the teacher's effort from those that cannot be so attributed. Children's learnings are affected by interactions with other children, the extent to which their parents are interested and become involved in what they learn (even if they don't know much about the "new" math!), what they see on TV, how the school is organized, the scheduling of their time by others, and a host of other factors. Since these factors will impinge on different pupils in different ways, one can hardly say that one teacher has demonstrated "competency" and another has not simply on the basis of changes in the performance of their two groups of pupils. In the Manchester Interview[1] George Collins describes how four instructors must agree that "the children" who have spoken words into a tape recorder have pronounced

them with "ninety percent accuracy" for the prospective teacher to be "given credit for effecting the appropriate change and behavior in children." Admirable as such elaborate efforts may be, they simply do not provide an adequate base for saying Miss Harrison caused a change, that it would not have taken place without her efforts.

Teacher Performance as a Base for Assessment

Turner's lower four Levels of Criteria offer alternatives to facing some of the complications immediately above--almost! They represent mainly a retreat from the direct frontal attack of determining whether the teacher did what he or she is hired to do--change pupil behavior--to a question of did she do those things she is taught to do because they are supposed to bring about changes in pupils. As Turner appropriately points out, this calls for evidence of the relationship between teacher performance and changes in pupil behavior. Thus, to have a defensible basis for this indirect approach to assessing the extent to which the teacher can do what she is hired to do (i.e., has the competency), someone must face the complications related to measuring change noted in the section immediately above. At some point in time someone must adequately measure change in pupil behavior and teacher performance under conditions controlled in such a way as to establish the relationship if indeed the indirect measure of teacher behavior is to have legitimacy.

For example, one might hypothesize that if a student-teacher does "A", change "B" in pupil behavior will follow. Acceptance of the fact that teacher performance "A" takes place as evidence that change "B" in pupil behavior has taken place calls for carefully conducted research to determine the conditions under which the relationship exists and the hypothesis holds. Consider statement No. 3 above. If one is to observe a situation structured by the student-teacher and attempt to assess competence on the basis of what she has done, there must be some evidence that delivering the desired performance will indeed "develop health and safety habits" if teacher behavior is to be accepted as evidence of change in pupil behavior. Unfortunately, there is little such research evidence for most competency statements such as those listed in the Catalog.

Levels three through six on Turner's list present successively greater divergence from the actual teaching situation in addition to dropping pupil performance data. It should be noted that at Levels one and two Turner would involve measures of both pupil and teacher performance.

Level three involves measuring the "professional actions" of teachers in the teaching situation and as Dr. Turner points out, "How 'good' or valid this criteria level is depends almost wholly on whether empirical relationships between teacher actions and pupil performance have been established through research or through data obtained by use of Criterion Levels one and two." This statement is equally valid for levels four, five and six.

Level four involves restriction of both the teaching context and range of teacher behavior used in Level three. "The context might be a typical micro-teaching context involving a few pupils or even peers acting as students. The teacher behavior observed would be restricted to a few categories in the cognitive or affective domain."

Level five "need not" involve performance before live students, but calls for demonstration of "at least one teaching skill, e.g., probing." At Level six the teacher is asked only to "show that he understands some behavior, concept, or principle germane to teaching."[13]

Moves down Turner's levels, from one through six, are directly related to ease of measurement and inversely related to nearness to the situation involved in the direct approach. The assessment of teacher performance while actually working with children as called for at Level three poses all of the measurement problems set forth above. It assumes that those involved in assessing the teacher's behavior can document a causal relationship between teacher performance and change in pupil behavior. Working under limited simulation procedures to assess teacher behavior during interaction with pupils as called for at Level four allows more control of conditions, permitting greater objectivity and focus of observation of teacher performance at a cost of some realism. Level five simply provides further control of factors affecting the assessment of teacher performance at the cost of possibly a crucial element, use of live students. Level six, assessment of knowledge of what to do is probably the most common type of assessment

across the total program of teacher education over the years. It is the one with the greatest development to date, poses the least complex set of measurement problems and is the furthest removed from the direct measure approach.

Why Measure at All?

In considering this question for PBTE it is helpful to further contrast course-based teacher education programs and PBTE programs.

Student Need for Information

In course-based programs, with the possible exception of selection of specific content courses, the student faces few programmatic decisions for which he or she needs information regarding competencies. This is not to discount student needs for feedback as a basis for personal decisions regarding such matters as effort or continuance in the teacher training program whatever its design. By contrast, the implied characteristics of PBTE as set forth by the AACTE Committee include "real choices among means are made available to the individual" and "the student is held accountable for performance..." Thus, under PBTE a new measurement need arises. If the student is expected to make choices among alternative experiences available to him, he needs information to assist him in maximizing the "goodness" of the choices he makes in his effort to develop the competencies he is asked to demonstrate before he is allowed to go into the field as a professional. If the decision among alternatives is to be his, we cannot expect him to "fly by the seat of his pants," but must see that he has some factual basis for believing that if he chooses experience "A", he will indeed move more efficiently toward the competency than if he chooses "B". He may choose to ignore the information, but if he is truly to be the decision maker, his trainers have an obligation to provide reliable and relevant information for his decisions.

Individual Professor Needs for Information

In most conventional programs the decision making assigned to students in PBTE noted immediately above is the responsibility of the teacher trainer. He, by training

and experience is attributed greater wisdom about the relationship between learning experiences and competency development and is thus expected to make decisions involving selection of learning activities. It should be noted that in such decision making there is a need for information regarding the relationship between learning experiences and development of competencies analogous to the relationship information need noted earlier for interpretation of indirect measures of teacher performance.

Conventionally, the professor faces the need for information regarding degree of development of a professional role skill as a basis for helping the student advance that skill as far as possible during the period of the course (quarter, semester). By contrast, the teacher trainer under PBTE needs only information to make the go-no go decision on the basis of the minimal level of development called for in the "explicit" criteria for assessing competencies which serve as the goals of a module.

As noted earlier, in a course structured program the professor is expected to make go-no go decisions regarding credit or no credit for the course and in addition differentiate among various levels of development above the minimal demonstration of learning required for granting of credit. The results of this decision making are generally reflected in the grades (e.g., A-D) assigned to students. There appears to be no comparable decision making and need for information on the part of the PBTE trainer.

Program Director Needs for Information

A student in a conventional program is graduated and/or certified for his professional role on the basis of satisfactory completion of the courses of the program. The overlap and cumulative nature of competencies for the courses of a program must be noted. Credit for the "student teaching" course is generally based on performance in the actual role situation. If such credit is granted, however, there is no need for information in the conventional program for decision making at the end of the program. PBTE, however, appears to call for assessment at the terminal point of the program. Satisfactory completion of a set of modules is apparently not considered sufficient evidence for graduation. In reality, the performance demanded at this point in a PBTE program may differ little from that required to get credit in a "student teaching" course of a good course-based program.

Employer Needs for Information

Because evaluation information collected during training is often shared with prospective employers, it is worth taking a brief look at the information collected to meet the decision-making needs identified above for PBTE and course-based programs that can be made available to the employer. Assuming data collection on competencies do not go beyond that required for the decisions identified above, the formal records of students from PBTE programs will all read the same--this student has demonstrated by performance that he has this minimal set of competencies. PBTE is based on the premise that all will have completed the program by having terminated effort on each module and the program itself when the required minimal competencies are developed and demonstrated. The employer then must pick among the applicants from the PBTE program on some basis other than information on the degree of development of competency for the professional role. While research would be needed to establish the relationship, the amount of time required to complete the PBTE program might be a relevant and useful piece of information for this decision making. Graduation and certification under either type of program then would seemingly guarantee as far as possible the minimal set of competencies and may well be bolstered with advisor and/or supervisor recommendations. The additional information (sic), however, in course grades under the conventional program can be used by the employer in an effort to identify differences in levels of development of the role skills in selecting among applicants.

Doesn't It Boil Down To A Need For A Basis For More Adequate Prediction?

It can be argued that the practical value of assessment is in the extent to which the information it provides reduces risks in predicting the future. This would be true whether the decision-making situation is that of a student selecting a learning experience from among "real choices," under PBTE, a course instructor attempting to assign a grade, or an employer selecting from among position applicants. The student selects experience A over experience B with the expectation that such a choice will be more effective in helping him develop the competencies set forth for the module.

The course instructor in assigning a higher grade to student C than student D is saying that he thinks that the former will perform better than the latter. The PBTE trainer certifies that minimal role skill competencies are achieved by student E and not by student F to imply that if put into the role E will do some things F will not do. The employer hires candidate G rather than candidate H because he expects G will perform "better" in the job than H.

Measurement considerations then should focus around the extent to which the information gathered reduces the risks for the decision makers in choosing among alternative courses of action; how well it helps to assure that selecting X rather than Y will on balance lead to a more desirable outcome. This means that certain characteristics are to be sought in the information to be generated by the measurement plan itself. To be useful in the prediction-decision making situation there must be a reliable relationship between assessments made in the here and now and differences in the future behavior of the teacher-students who are measured. This is a predictive validity concern. It is needed when indirect measures (Turner's Levels three to six) are accepted as evidence as to how pupils would perform if measured directly at Levels one and/or two. It is involved if attempts are made to assess at Levels one and two as a basis for saying that those student-teachers who meet minimal competency standards will be effective teachers and those who do not will not.

The degree to which the measures gathered will have the predictive validity that will reliably reduce risk in selecting among alternatives will be determined by the general characteristics identified earlier when problems related to the measurement of performance were discussed. The concern with time in that discussion is obviously a core consideration. Also, the adequacy of the sampling of behavior, and the objectivity and reliability of the observations made and recorded will determine the value of the measures as risk reducers. We can now add a concern for the relevance of differences in behavior observed in the training situation to differences that will occur later "on-the-job." Measures of performance will be of little value if differences identified are not related to the differences of ultimate concern; if differences in performance now are not reliably related to differences in performance later.

Regarding the measurement system itself one should also apply a "utility" criterion. Basically, this is asking of each data gathering effort whether the costs of time, money and effort can be justified by the extent to which they reduce risk for decision makers. There are two ways to apply this criterion. One is to ask, in light of the costs involved, the extent to which the added information provided has reduced risks in selecting among alternatives. A second application involves comparing the costs of this particular means to getting the information with costs in using another means to the same information or equally predictive information highly correlated with it (e.g., indirect vs. direct assessment).

The discussion immediately above is obviously based on an assumption that the answer to the question posed for this section--isn't it a matter of prediction?--is affirmative. Where are we if it is negative? We would have to say assessing is desirable in and of itself, and the results will not be "used" in the sense discussed above as a basis of decision making. As soon as they are used for decision making, whether it be for program revision or any of the situations described above, an element of predictability enters.

If one assumes the answer is "no," some of the criteria discussed above do not apply. Cost would probably remain relevant, but would not be judged in terms of reducing risks of decision making. It would appear that under this assumption one criterion might center around generalization of differences observed (e.g., competencies demonstrated or not demonstrated) and some total population of behaviors that could be exhibited at that same point in time. Another might be the degree of positive affect generated by the measurement process for either the student, the trainer, or both. It might involve a criterion of the extent to which those involved enjoyed the experience and the extent to which this measurement experience produced more enjoyment than other experiences that might have occupied the time frame used for measurement. One would have a situation involving measurement for measurement's sake.

Summary

The AACTE Committee on "Performance-Based Teacher

Education" has posited that PBTE is, "by no means a repudiation of all that has gone before in teacher education," and added that, "it has the potential to revolutionize teacher education." If such potential indeed exists and is to be realized, adequate attention must be devoted to the element the Committee says is "critical to the success" of PBTE--adequate evaluation.[3] This paper has set forth some basic measurement and decision-making concerns crucial to such evaluation.

Performance has long served as a basis for evaluation in teacher education and there is a history of well over fifty years of experience of attempts to improve our ability to assess it. It would be folly to ignore this knowledge base in dealing with the evaluation aspects of PBTE.

PBTE calls for assessment of behavior repertoires as a basis for terminating developmental efforts on a "module" and a prospective teacher's PBTE program, as well as a less well defined on-going "feedback" system. Such evaluation calls for assessment information designed to serve a selection-type of decision; action to be taken in terms of acceptance that a person does or does not have the "competency" under development. It was noted, however, that what the student teacher does under a specific set of circumstances at a given point of time is of less concern than what that performance tells us about future performance--the validity of the assessment of predicting future effectiveness in helping pupils learn.

Problems in assessing performance to arrive at valid information include difficulties in obtaining objective and reproducible observations, sampling problems involving elements of time, environmental factors surrounding the performance under observation, and characteristics of both the pupils and the type of learning involved.

Turner's "Levels of Criteria" serve as an excellent basis for drawing attention to problems associated with a frontal approach on assessment of the raison d'etre of teachers--to cause change in pupil behavior.[13] The difficulties in arriving at reliable measures of change in pupil behavior and an accurate attribution of the teacher's contribution to that change are major obstacles of adequate assessment using the direct approach.

Turner's lower criterion levels involve assessment of teacher behavior that is supposed to bring about the desired change in pupil behavior. This substitution can only be justified on the basis of a demonstrated reliable relationship between the assessed teacher behavior and change in pupil behavior that would be measured using the direct assessment approach. While such status assessment of teacher behavior gets one away from some of the immediate problems of measuring change in pupil behavior, it still involves vital concerns of adequate observation of relevant behavior, accurate recording and an appropriate comparison of the behavior observed with that set forth as evidence of the existence of the competency. And, at some point in time, the research to establish the relationship between teacher behavior and change in pupil behavior to establish the legitimacy of the substitution must be conducted.

Consideration also must be given to the relative costs involved in direct vs. indirect approaches, their comparative "utility" (gain in useful decision-making information per unit cost) and their reliability for forecasting the future teaching behavior that is of ultimate concern.

As the Committee has noted, the ability to set forth competencies "stated so as to make possible explicit assessment of a student's behavior in relation to specific competencies", employing criteria that are "explicit in stating expected levels of mastery under specified conditions" is essential to an adequate assessment of performance for decision making in PBTE. Such competency statements and accompanying criteria are extremely difficult to find.

If the basic principle upon which PBTE rests is acceptance of the existence of a competency on the basis of demonstration through performance, its success hinges on adequate assessment. The decision-making bases and some of the major problems involved in achieving such assessment have been discussed in this paper. The problems are neither few nor simple. They will not go away by ignoring them. The degree to which they can be surmounted is as yet undetermined and this will be the situation until a concerted effort is brought to bear on them. Unless and until this effort is made, the real potential for a significant contribution of the PBTE approach to teacher education will remain unknown.

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ABOUT THE TEXAS TEACHER CENTER PROJECT

The AACTE Committee on Performance-Based Teacher Education serves as the national component of the Texas Teacher Center Project. This Project was initiated in July, 1970, through a grant to the Texas Education Agency from the Bureau of Educational Personnel Development, USOE. The Project was initially funded under the Trainers of Teacher Trainers (TTT) Program and the national component was subcontracted by the Texas Education Agency to AACTE.

One of the original thrusts of the Texas Teacher Center Project was to conceptualize and field test performance-based teacher education programs in pilot situations and contribute to a statewide effort to move teacher certification to a performance base. By the inclusion of the national component in the Project, the Texas Project made it possible for all efforts in the nation related to performance-based teacher education to gain national visibility. More important, it gave to the nation a central forum where continuous study and further clarification of the performance-based movement might take place.

While the Texas Teacher Center Project is of particular interest to AACTE's Performance-Based Teacher Education Committee, the services of the Committee are available, within its resources, to all states, colleges and universities, and groups concerned with the improvement of preparation programs for school personnel.

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The American Association of Colleges for Teacher Education is an organization of more than 860 colleges and universities joined together in a common interest: more effective ways of preparing educational personnel for our changing society. It is national in scope, institutional in structure, and voluntary. It has served teacher education for 55 years in professional tasks which no single institution, agency, organization, or enterprise can accomplish alone.

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